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AUTHOR Case, Elizabeth J.; Christopher, Marty
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ABSTRACT

The paper describes the Writing to Read instructional system and its implementation in five Albuquerque (New Mexico) public schools with kindergarten, first grade, and special education students. The Writing to Read System is a multisensory, multimedia literacy program and involves five types of materials: a computer-based instructional program; correlated student work journals; word processing; language-development activities; and use of read-along tapes of children's literature. Students use the program for 1 hour each day. Pretests and posttests given 2 months apart were used to evaluate the program. Major findings indicated that, on standardized reading tests, kindergarten and primary special education students receiving the Writing to Read instruction progressed almost five times faster than did students in the comparison group. In addition, the Writing to Read System proved to be an effective intervention strategy for students who had been referred for special education testing but who had not yet been tested or placed. Contains nine references. (DB)

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Pilot Study

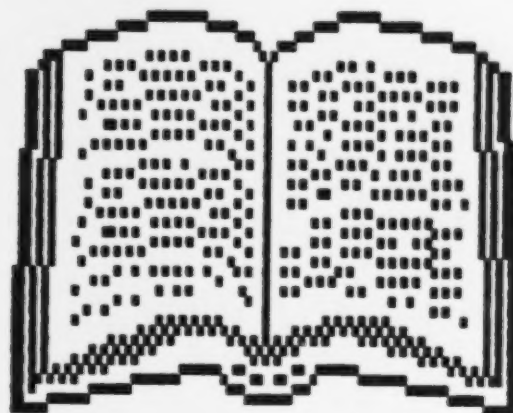
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Of The Writing



To

Read



System

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725 University, S.E.
Albuquerque, New Mexico 87106

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Ronald A. Williams, Director

Prepared by:

ELIZABETH J. CASE, Ph.D.
EHA-B Program Evaluation Specialist

Marty Christopher, Resource Teacher
EHA-B Writing To Read System

November, 1989

TABLE OF CONTENTS
WRITING TO READ PILOT SYSTEM

ADMINISTRATIVE SUMMARY.....	1
Program Description.....	1
Research Method.....	1
Major Findings.....	11
 PRELIMINARY STUDY OF THE WRITING TO READ PILOT SYSTEM.....	 1
Introduction And How The Program Began.....	1
The Writing To Read System.....	1
 DEVELOPMENT OF THE STUDY.....	 3
 RESULTS.....	 5
Comparison Group Results.....	5
Treatment Group Results.....	6
 SUMMARY AND CONCLUSIONS.....	 9
Major Findings.....	9
 REFERENCES.....	 10

ADMINISTRATIVE SUMMARY

Program Description

In fulfilling federal requirements, Albuquerque Public Schools (APS) developed and implemented a Comprehensive System of Personnel Development (CSPD) unit. One of the mandated tasks for the unit was to identify promising programs and practices and adopt the programs if appropriate for APS students.

Members of the Special Education Department identified the Writing To Read System as a program that might be effective for primary children.

The program was first tried at Lovell Elementary School during the 1986-87 and 1987-88 school years. Ninety (90) kindergarten, first grade, and special education students participated in the program.

The Writing To Read System was implemented in six schools during the 1988-89 school year. The schools included: Duranes, Hawthorne, Kit Carson, Lovell, Pajarito, and Zia Elementary Schools.

The Writing To Read System is a multimedia program for young children. The program is an approach designed to develop writing and reading skills in children through the use of a computer-based instructional program, student journals, language activities, and read-along tapes of children's literature.

Research Method

The Special Education Department of the Albuquerque Public Schools decided to evaluate the effectiveness of the Writing To Read System during the spring of the 1988-89 school year using norm-referenced tests. The EHA-B Evaluator was responsible for verifying data, analyzing the data, interpreting the results, and reporting the results. Kindergarten and primary special education students at six elementary schools⁽¹⁾ participated in the study.

The effectiveness of the program was evaluated using a pretest/posttest model. Kindergarten and primary special education students at all six sites were given pretests in March 1989 and were given posttests in May 1989. The scores were then compared.

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- (1) Primary special education classes serve students who cannot function in the regular classroom. Primary special education classes served children who were in grades kindergarten through second grade.
 - (2) The schools participating in the study included: Duranes, Kit Carson, Hawthorne, Pajarito and Zia Elementary Schools. Kindergarten students at Atrisco Elementary School served as the comparison group.

Major Findings

1. Standardized reading tests showed that, in eight weeks, kindergarten and primary special education students who utilized the Writing To Read System progressed almost 5 times faster than did students in the comparison group.
2. The Writing To Read System proved to be an effective intervention strategy⁽³⁾ for students who had been referred for special education testing but who had not yet been tested or placed. The program worked as an effective instructional system and as an intervention strategy for kindergarten children.

(3) The State Department of Education mandated that school districts establish a policy for referring students for special education evaluation. APS policy requires that schools utilize regular education intervention strategies before referring students for special education evaluation. (Albuquerque Public Schools, Special Education Department, Operational Standards, 1987.)

PRELIMINARY STUDY OF THE WRITING TO READ PILOT SYSTEM

Introduction And How The Program Began

The Education For All Handicapped Children Act-Part B (EHA-B) requires the establishment of a comprehensive system of personnel development (CSPD) for all personnel working with handicapped children. One of the mandated tasks for each CSPD plan is

...adopting, where appropriate,
promising educational practices and
materials... (20 U.S.C. 1413(a) 3.)

During the 1986-87 school year, special education administrators selected the Writing To Read System as a "promising practice." The System was implemented at the Lovell Elementary School during the Spring of 1987. In that first year, 44 kindergartners, 28 first graders, and 16 primary special education⁽¹⁾ students participated in the Writing To Read System. Teachers reported significant progress measured by teacher observation and informal assessment techniques.

During the 1987-88 school year, a Special Education Computer Resource Teacher submitted a proposal to the Director of Special Education to expand the system. The Resource Teacher noted that research conducted by the Educational Testing Service indicated that the program was effective for at-risk students. At-risk students were those kindergarten and first grade children functioning one-half year or more behind in reading and writing skills.

During the spring semester of the 1988-89 school year, kindergarten and primary special education students at five schools⁽²⁾ participated in the Writing To Read System. Prior to the students' participating in the program a decision was made by the staff and special education administrators to evaluate the effectiveness of the Writing To Read System using a pretest/posttest model.

The Writing To Read System

The Writing To Read System is a multisensory, multimedia literacy program for young children. The program is designed to develop the writing and reading skills of primary-aged students. The program involves five types of materials: a computer-based instructional program; correlated student work journals; word processor; language-development activities; and read-along tapes of children's literature.

-
- (1) Primary special education classes serve students who cannot function in the regular classroom. Primary special education classes served children who were in grades kindergarten through second grade.
 - (2) The schools participating in the program included: Duranes, Kit Carson, Hawthorne, Pajarito and Zia Elementary Schools. Kindergarten students at Atrisco Elementary School served as the comparison group.

Children who participated in the study utilized the program for one hour each day. Students at each site were to utilize the same sequential learning cycle.

1. Students first used the computer program for 15 minutes. Each computer lesson focused on one word and the phonemes ⁽³⁾ that make up that word. Students saw the word and color images on the screen. At the same time, they heard the sounds and word on the speech synthesizer.
2. During the second 15 minute segment, the students were provided reinforcement activities in a work journal. The journal provided each child with practice in writing and reading. The teachers used the journal to keep a daily record of progress.
3. During the next 15 minutes, students participated in additional language development activities. This consisted of listening to a tape recorded story as they followed along in the book and using various materials (e.g., clay, pipe cleaners, sand) to make new words.
4. The last fifteen minutes of each daily session was spent at the computer. Students could type whatever they wished.

Teachers who were selected to participate in the study received inservice training prior to the start of the project. The teachers at each school site helped set up the Writing To Read Centers. The teachers specially tailored the centers to the needs of young children. The environments were filled with bright colors, lively graphics, and multiple learning stations.

(3) There are 44 phonemes or sounds in the English language.

DEVELOPMENT OF THE STUDY

The Special Education Department of the Albuquerque Public Schools had been piloting the Writing to Read System for three years at one site. Special Education Department planners felt that an objective, systematic study of the system must be conducted before expanding the program.

Since the Writing To Read System was funded by EHA-B monies, the EHA-B Evaluator was invited to assist with the study. The Evaluator worked cooperatively with members of the Special Education Department in verifying data, analyzing the data, interpreting the results, and reporting the results.

The EHA-B Resource Teacher for the Writing To Read Project developed the research design, trained the teachers in the program, pretested all students, monitored the use of the program at all sites, and posttested all students. The Resource Teacher also assumed responsibility for scoring all tests.

The Metropolitan Achievement Test (Primer Level) was selected as the measurement tool. The test was selected because it most closely matched the objectives and skills taught in the Writing To Read System.⁽⁴⁾ The Compendium of Instructional Objectives and the tests themselves were utilized to analyze the content validity of the test.

Teachers and principals from six elementary schools volunteered to participate in the project. Fifty-seven (57) kindergarten students at Atrisco Elementary served as the comparison group (received other reading approaches) and 343 students at five other school sites received treatment. The treatment groups included kindergartners and primary special education students.⁽⁵⁾

All students were pretested in March 1989 using the Metropolitan Achievement Test (Primer Level). Students at the experimental sites then used the Writing To Read System for eight weeks. All students (including the comparison group) were then posttested during the last week of May 1989 using an alternative form of the Metropolitan Achievement Test.

(4) The test measured students' letter recognition skills, sound recognition skills, visual matching skills, phonics skills, and sight vocabulary.

(5) Students in special education classes were all C and D level students. Students in these programs have very special learning needs and require modification of materials and curriculum. In accordance with the Family Rights and Privacy Act, no further information can be provided to protect the identity of the students and their families.

Characteristics of the 343 students in the control group are summarized in Figures 1 and 2. Figure 1 shows that 150 or 43.7% of the treatment group were female and 184 or 53.6% were male. Information was missing for 9 or 2.7% of the students.

Figure 1:

Sex Of Students In Treatment Group

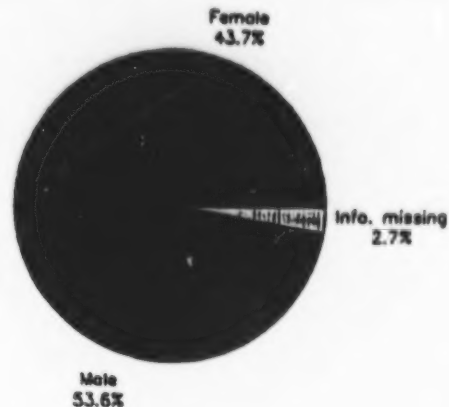
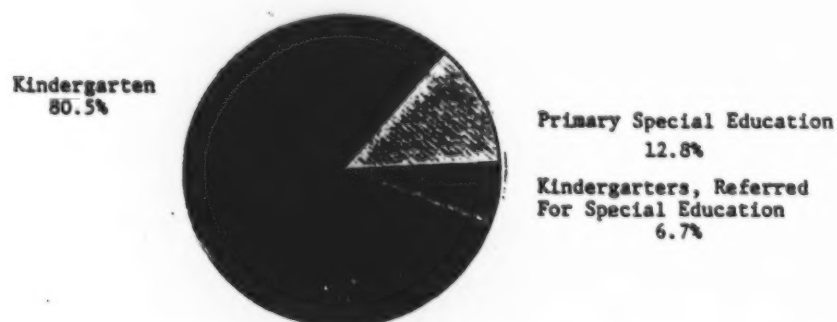


Figure 2 summarizes the program placement of the students. Figure 2 shows that 276 or 80.5% of the students were enrolled in regular kindergarten while 44 or 12.8% of the students were enrolled in primary special education C or D level classes. The remaining 23 or 6.7% students were in regular kindergarten but had been referred for special education. However, they had not been tested or placed at the time of the study.

Figure 2:

Program Placement Of Students In The Treatment Group



RESULTS

The results for the comparison group are presented first. The results for the Writing To Read group (treatment group) follow.

Comparison Group Results

A total of 45 students in the comparison group took both a pretest and a posttest. The average raw score, scaled score, and normal curve equivalent score (NCE) for pretests and posttests are reported in Table 1.

TABLE 1: Mean Scores For Comparison Group

Score	Pretest	Posttest	Gain
Raw Score*	9.00	11.00	+ 2.00
Scaled Score**	282.30	296.40	+13.90
NCE***	27.48	30.56	+ 3.08

* There were 37 items on the test.

** Scaled scores on the Metropolitan Achievement Test ranged from 98-619. Scaled scores were derived by converting the number right (raw score) to a scaled score by a conversion table.

*** The NCE scale ranges from 1 to 99. The scores are based on an equal interval scale--so the difference between two successive scores has the same meaning through-out the scale.

Students in the comparison group made an average NCE gain of 3.08 points from the pretest to the posttest. According to the test norms, this was considered to be somewhat above normal educational progress during the eight week period between pretesting and posttesting.

Treatment Group Results

A total of 203 students participating in the Writing To Read System took both a pretest and a posttest. The average raw score, scaled score, and NCE score for pretests and posttests are reported in Table 2. Students making normal educational progress in eight weeks of school would be expected to have an increase in raw scores and scaled scores, but the NCE scores would remain steady.

TABLE 2: Mean Scores For Treatment Group

Score	Pretest	Posttest	Gain
Raw Score*	10.00	14.00	+4.00
Scaled Score**	284.36	338.18	+53.82
NCE***	27.49	41.88	+14.39

* There were 37 items on the test.

** Scaled scores on the Metropolitan Achievement Test ranged from 98-619. Scaled scores were derived by converting the number right (raw score) to a scaled score by a conversion table.

*** The NCE scale ranges from 1 to 99. The scores are based on an equal interval scale--so the difference between two successive scores has the same meaning throughout the scale.

The average NCE scores were analyzed to determine if students progressed above what would normally be expected. The results of the paired t-tests determined that the students in the Writing To Read System made statistically significant gains. More specifically, the students made progress above what should be expected for normal growth. Students made an average NCE gain of 14.39 points from the pretest to the posttest. That represents a 15% gain of NCE points in eight weeks.

TABLE 3: Comparison Of Results

	Number Of Matched Pairs	N C E		
		Pre	Post	Gain
<u>Control Group:</u>	48	27.48	30.56	(+3.08)
<u>Treatment Groups:</u>				
Duranes	28	29.9	41.9	(+12.0)
Hawthorne	30	27.2	37.7	(+10.5)
Kit Carson	8	34.2	69.3	(+15.1)
Pajarito	64	20.4	36.5	(+16.1)
Zia	53	32.3	49.5	(+17.2)

Table 3 summarizes the mean NCE score by school. The average NCE score increased among the treatment group anywhere from 10.5 points at Duranes to 17.2 points at Zia. Students at all five sites participating in the Writing To Read System made significant gains from the pretest to the posttest. In contrast, students in the comparison group made gains of 3.08 NCE points.

Finally, a comparison of progress was made for three subgroups of students participating in the Writing To Read System. The groups included: 1) students receiving special education services, 2) kindergarten students, and 3) kindergarten students referred for special education but not tested or placed. Differences in group scores were statistically significant at the $p < .001$ level on both pretests and posttests. The results are presented in Table 4.

TABLE 4: Mean Scores By Subgroup

Group	Pretest	Posttest	Gain
<u>Treatment Groups</u>			
Special Education	343.04	434.34	91.30
Regular Education	276.70	326.89	50.19
Referred	219.80	290.69	70.89
<u>Control Group</u>	282.50	296.40	13.90

Note: Standard Scores were utilized for this table.

All three treatment groups made progress above what would be expected for normal growth. Special education students made progress as did those referred for special education. Regular education students also progressed, increasing the mean score by 50 scaled scores. The salient points include: (1) the program was helpful for the special education students, who gained a mean of 91 scaled scores; (2) students referred for special education responded positively to the intervention as demonstrated by increasing the mean score by almost 71 scaled scores; (3) participants in the program progressed at a greater rate than did the comparison group, which gained an average score of almost 14 scaled scores; and (4) perhaps those students referred for special education (at this age level) could benefit from this intervention at other locations.

A crosstabulation comparison was made between pretest and posttest scores based on treatment group quartiles. Table 5 summarizes the results of the comparison of students' progress by quartiles.

TABLE 5: Percent Of Students Scoring By Quartile

Quartile	Pretest	Posttest	Change*
Highest Quartile	1.0%	3.9%	+2.9%
Second Quartile	8.4%	31.0%	+22.6%
Third Quartile	67.0%	57.6%	-9.4%
Lowest Quartile	23.6%	7.4%	-16.2%

* Numbers in the "change" column reflect the additional students scoring in a higher quartile if a positive number. Negative numbers indicate a decrease of students scoring in the lower quartiles on the posttest.

On the pretest, a total of 9.4% of the students were functioning in the upper two quartiles. The vast majority of the students, 90.6%, were functioning in the two lowest quartiles. Twenty three point six percent (23.6%) of the students scored in the lowest quartile.

On the posttest, 34.9% of the students were functioning in the upper quartiles--an increase of 24.5% of the students. It was also significant that only 7.4% of the students scored in the lowest quartile--a decrease of 16.2% of students from the pretest.

Data indicated that The Writing To Read System appeared to be effective. All students participating in the program made progress above what would be expected for normal growth.

SUMMARY AND CONCLUSIONS

The Writing To Read System is a multimedia literacy program for young children. The program is designed to develop the writing and reading skills of primary-aged students. Students in five elementary schools participated in the Writing To Read Pilot Project sponsored by the APS Special Education Department.

The pilot project was designed to evaluate the impact of the Writing To Read System on kindergarten and special education students. The effectiveness of the program was evaluated using a pretest/posttest model.

Major Findings

The major findings of the study were:

1. Students who participated in the Writing To Read System made progress above what would be expected for normal growth. More specifically, students in the control group made an average NCE gain of 3.08 points where students in the program increased an average NCE gain of 14.39 points. Students in the program made 4.67 times the progress of the comparison group.
2. The Program proved to be effective for primary special education students enrolled in C and D level classes.
3. The Program proved to be effective in developing reading skills for children enrolled in kindergarten programs.
4. The Program also proved to be effective in developing reading skills for kindergarten students who have been referred for special education but who have not yet been tested and placed.
5. In an eight-week period, 16.2% of students scoring in the lowest quartile on the pretest increased their skills enough to score in higher quartiles on the posttest.
6. Standardized reading tests showed that kindergarten and primary special education Writing To Read Students progressed faster than students in the comparison group.
7. Standardized tests showed that, after eight weeks, Writing To Read students demonstrated a significant advantage over the comparison group students in reading ability. The average advantage was 14.39 NCE scores.

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